

## REMARKS

This Amendment is responsive to the Office Action of March 3, 2006. Reconsideration and allowance of claims 1, 7, 9, 11-13, 15, 22, 26, 29, 31, and 42-47 are requested.

### The Office Action

The Examiner objected to the specification and drawings regarding reference numerals 29/160 and 20.

The Examiner objected to claims 7-9, 13, 15, 26, 29, 31, and 44-46.

Claims 1, 7-13, and 15 stand rejected under 35 U.S.C. § 112.

Claims 15, 29, and 42-47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Manwaring (US 5,638,819) in view of Wilk (WO 93/15648).

Claim 22 stands allowed.

Claims 26 and 31, against which no references were cited, are understood to contain allowable subject matter once the objection is resolved.

New claims 48 and 49 have been added.

### 35 U.S.C. § 112

Claims 1, 7, 9, 11-13, and 15 have been amended to address the Examiner's 35 U.S.C. § 112 objections. Claim 1 has been amended to include the subject matter of claim 10 as suggested by the Examiner.

There being no outstanding rejection on art of claims 1, 7, 9, and 11-13, it is understood that these claims are now in condition for allowance.

### Objections to the Claims

Claims 7, 13, 15, 26, and 29 have been amended to address the Examiner's objections. Because there is no outstanding rejection on art of claims 26 and 31, it is understood that this amendment now places claims 26 and 31 in condition for allowance.

Although the Examiner objected to claims 44-46, no basis for such objection was given in the Office Action. In reviewing claims 44-46, no informalities which would serve as the basis for an objection were noted.

**The Claims Distinguish Patentably  
Over the References of Record**

The video monitor 32 of Wilk produces the same display as display 44 of **Manwaring**. That is, the video monitor 32 of Wilk takes the place of the optical eyepiece of a traditional, optical endoscope. Like display 44 of Manwaring, it shows the operator what is in front of the tip of the endoscope. Because the display 44 of Manwaring already is a video display like Wilk, Wilk provides no motivation to change the display 40 of Manwaring. On the other hand, if the Examiner is proposing that the information of screen 40 of Manwaring be placed on the video monitor 32 of Wilk, then the video monitor 32 of Wilk would need to be made as large and heavy as the monitor 24 of Manwaring. To shrink screen 40 down to the small size of the video display 32 would render it too small for its intended use. On the other hand, enlarging video monitor 32 to a large enough size to make the information on screen 40 meaningful, would require making the video monitor 32 of Wilk so large and bulky that it would interfere with the normal and proper operation of the endoscope. Analogously, placing a screen the size of the screen 40 of Manwaring on to probe 12 would render the probe 12 of Manwaring too awkward and difficult to use in performing the delicate brain surgery operation for which it is designed. It is submitted that the Examiner's combination of elements would render the Manwaring probe unsuitable for its intended and designed task.

Further, it is submitted that an operating premise of Manwaring is to give the surgeon a large display with all of the information in one place. If screen 40 of Manwaring were condensed onto the display of video monitor 32 of Wilk and the monitor 32 of Wilk were attached to the probe 12 of Manwaring, the surgeon would be unable to guide the probe accurately. If only part of the screen 40 were placed on the probe 12 of Manwaring and the rest remained on a large video screen, which is not suggested by either reference, then the surgeon's attention would be diverted between the two screens and the advantages of Manwaring's single display would be lost. Accordingly, it is submitted that the combination of Manwaring and Wilk do not provide any motivation to combine them as suggested by the Examiner and that the claims distinguish patentably over this combination.

**Claim 15** calls for at least two indicators mounted to the tool which indicate the difference between the actual and desired position of the tool and the

actual and desired orientation of the tool. Manwaring only has a single indicator **46** which indicates whether the tip of the probe **12** is on trajectory. There is no second indicator. Moreover, the display **46** of Manwaring does not provide its indication in the frame of reference of the tool. Rather, as shown in Figure 8 of Manwaring, although misalignment between the tip **36'** of the probe and the trajectory **54'** is indicated, the display **46** does not tell or provide any indirect, intuitive direction to the operator which way to move the tool. Rather, the operator must mentally figure out how to move the tool to move points **36'** and **54'** back into alignment.

Claim 15 solves this problem by providing the indication in the frame of reference of the tool. Accordingly, it is submitted that **claim 15 and claim 48 dependent therefrom** distinguish patentably and unobviously over the references of record.

**Claim 22** stands allowed.

**Claim 26** has been amended to address the Examiner's objection. Accordingly, it is submitted that **claim 26 and claim 31** are now in condition for allowance.

**Claim 29** calls for using a position indicator to indicate to a human the magnitude of the distance that the tool must be moved for the tip to reach the desired position. Claim 29 further calls for determining the actual position of this position indicator. In Manwaring, there is no suggestion of determining a position of the display **40**. Indeed, it is submitted that the display **40** of Manwaring can be at substantially any location relative to the tool which is convenient to the surgeon. Wilk makes no determination of the location of display **32** and does not cure this shortcoming of Manwaring.

Moreover, the indication is provided by varying the color or blink rate of an indicator. Neither reference suggests a color or blink rate indicator. Accordingly, it is submitted that **claim 29** is now in condition for allowance.

**Claim 42** calls for a display which indicates to the human a direction in the frame of reference of the tool and the display in which the tool should be translated. By contrast, Manwaring teaches that the direction indicator should be placed on the large diagnostic image display where the surgeon can see both concurrently. Wilk only has a display **32** which displays the view from the tip of the

endoscope. Wilk provides no suggestion of attaching a movement direction indicator to a tool.

Further, claim 42 calls for the indication to be in a frame of reference of the tool and the display. In Manwaring, the probe **12** and the display screen **40** do not have the same frame of reference. Indeed, as the probe moves, the frame of reference of the probe moves with it, while the display screen **40** remains stationary. Wilk provides no motivation to provide a display which indicates a direction of motion in the frame of reference of the tool and display. Accordingly, it is submitted that **claim 42 and claim 49 dependent therefrom** distinguish patentably and unobviously over the references of record.

**Claim 43, which depends from claim 42,** calls for the display to include a plurality of indicators disposed at angular intervals around a central point for indicating the direction that the tool should be translated. With reference to Figure 8 of Manwaring, which shows the misalignment display, there is no series of indicators in the display disposed at angular intervals surrounding the central point which provides an indication of the direction the tool should be translated. Rather, Figure 8 of Manwaring shows that the tool needs to be moved by the misalignment of points **36'** and **54'**. However, the surgeon must determine mentally what direction to move the tool in order to bring these points into alignment. There is no plurality of indicators at angular intervals for providing this indication of the direction the tool should be translated. Accordingly, it is submitted that **claim 43** distinguishes patentably over the references of record.

**Claim 44** calls for a first display remote from the tool which displays an anatomical image and desired trajectory as well as a second display associated with the tool for indicating differences between the actual position of the tool and the desired trajectory. Both Manwaring and Wilk only suggest providing a single display. There is no suggestion of one display being remote and a second display being associated with the tool. Further, the display associated with the tool is required to be the display for indicating differences. By contrast, the display **32** of Wilk, although associated with the tool, provides no indication of direction or error. It merely provides the viewer with a view from the end of the endoscope.

Manwaring calls for a unified display with all information in one location so that the surgeon can keep his eyes on all display aspects. There is no suggestion in

Manwaring of any advantage to be had from splitting the information among plural displays such that the surgeon would have to look back and forth between them. Accordingly, it is submitted that **claim 44** distinguishes patentably and unobviously over the references of record.

**Claim 45** calls for the diagnostic image to be displayed remote from the tool and a direction indicating display to be disposed on the tool. Manwaring suggests only a unified display remote from the tool. Wilk, which places only the diagnostic display on the endoscope, does not overcome this shortcoming.

Further, claim 45 calls for the direction indicating display to indicate the direction in which the handle end of the tool should be moved. By distinction, Manwaring only shows deviation between position of the tip **36'** and a trajectory **54'**. From this information, the user of Manwaring must deduce how to move the tip and further must deduce how to move the rest of the tool in order to make the tip move as deduced. This shortcoming is not cured by Wilk, which makes no suggestion regarding a display for indicating how to move the handle end of a tool. Moving the handle end of the flexible endoscope of Wilk in different directions does not produce directly corresponding motions of the end of the flexible endoscope. Accordingly, it is submitted that **claim 45 and claim 46 dependent therefrom** distinguish patentably and unobviously over the references of record.

**Claim 47** calls for the visual indication of direction to indicate a direction in which the hand-held portion of the tool should be moved in order to bring the tip to the desired position. By contrast, Manwaring shows the error in tip position and requires the surgeon to deduce the appropriate corrective motion. Accordingly, it is submitted that **claim 47** distinguishes patentably and unobviously over the references of record.

#### Drawing Objections

The Examiner objected to the drawings as not including reference numeral “**20**”. In Figure 1, the discussed computer is inside the console **18** and is not visible in this picture. Accordingly, labeling the computer “**20**” would be awkward. Further, it is submitted that the computer does not require a reference numeral. Accordingly, the applicants have deleted reference numeral “**20**” from the

specification. With this amendment to the specification, it is submitted that drawings objections have been resolved.

**Telephone Interview**

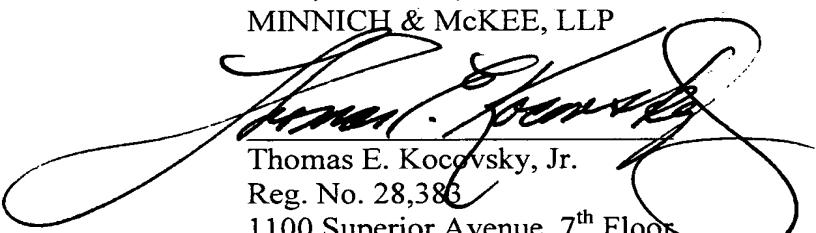
In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone Thomas Kocovsky at (216) 861-5582.

**CONCLUSION**

For the reasons set forth above, it is submitted that the application and claims 1, 7, 9, 11-13, 15, 22, 26, 29, 31, and 42-49 distinguish patentably and unobviously over the references of record and meet the other statutory requirements. An early allowance of this application is requested.

Respectfully submitted,

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